REQUEST FOR INFORMATION
ON
GENERATION IV NUCLEAR ENERGY SYSTEM CONCEPTS

The U.S. Department of Energy Office of Nuclear Energy, Science and Technology (DOE-NE) has initiated a Generation IV project to work on an international basis to identify, assess, and develop new nuclear energy systems that make significant progress in sustainable energy development, safety and reliability, and economics. Sustainable development goals focus on fuel utilization, waste management, and proliferation resistance. Safety and reliability goals focus on safe and reliable operation, investment protection, and eliminating the need for emergency response. Economics goals focus on competitive life cycle cost and financial risk.

To facilitate the study of a broad range of innovative concepts, DOE-NE invites advanced reactor concept proponents to provide summary information on those nuclear energy system concepts that have the potential to make significant advances toward the Generation IV goals. The information submitted to this request will assist in the preparation of a technology roadmap to define the broad concepts that will be studied. *Concepts* are complete Generation IV nuclear energy systems that can be deployed by 2030, ranging from the front to the back end of the fuel cycle as well as the reactor, its energy conversion systems and balance of plant. Information about the Generation IV initiative, including the February 13, 2001 draft of the goals, can be found on the Generation IV website (*http://gen-iv.ne.doe.gov*).

This Request for Information is intended to solicit responses from the broad international R&D community on innovative nuclear system concepts to be considered in developing a technology roadmap.

All information in response to this request must be submitted by electronic mail to Mr. Steven Sorrell at *sorrelsw@id.doe.gov* as an attached file with the format specified below. Submittals must be received by **April 16, 2001**.

Concepts for the roadmap are submitted only for the purpose of informing the DOE about potential candidate nuclear energy systems. This is NOT a solicitation for proposals. All information submitted may be shared publicly and may be modified for use in the technology roadmap. The submittal of a concept to this request shall not constitute an acknowledgement that the submitter is a preferred source of information about the concept. Proprietary information must not be submitted and cannot be accepted.

The format for submitting a concept summary must adhere to the following specifications:

1. The concept summary must not exceed 5 pages in length and must not contain more than 2 figures. It should present a technical summary of a concept for consideration in the Generation IV technology roadmap. *While entire system concepts are desired, it is permissible to submit information covering a unique innovation for part of a system, such as a new type of reactor, a technology for a fuel cycle, or innovative energy conversion equipment for the system. In such cases the overall system that the part is intended for should be indicated.* The summary should also contain a brief statement about how the proposed concept will offer specific advances toward the Generation IV goals. The summary should be written at a level understood by a technical person knowledgeable in nuclear energy technology.

2. The concept summary must adhere to the file format found in the sample file that is available on the above website. The cover page found in the file does not count against the five page limit. The cover page

identifies contact information for the submitter(s), and should identify a suggested category for the concept from the following. The concept should pertain to nuclear energy systems that employ critical fission reactors that are: (1) water-cooled, (2) gas-cooled, (3) liquid-metal-cooled, or (4) other.

3. The concept summary must be an electronically readable Microsoft Word format file written in English. Margins of at least 1" must be provided around all pages, and text no smaller than 10 points must be used with a line spacing of at least 15 points. Figures may not have text smaller than 6 points. The concept summary is limited to a maximum file size of 250 kilobytes.

4. Additional information beyond the summary may be included as electronic attachments, but the overall description of the concept must be fully contained in the 5 page concept summary. It is recommended that such attachments contain lists of additional references that are available, prior studies or analyses of the concept including analyses focused on any of the Generation IV goals, or evaluations of the R&D needs of the concept. The additional attachments are limited to a file size of 1 megabyte each, and no more than five are permitted.

5. If more than one concept summary is submitted, they must be sent in separate submittals.

An initial activity of the roadmap is the definition and screening of system concepts that offer the best potential to meet the goals of Generation IV. This request for information is intended to assist DOE-NE by identifying innovative concepts for consideration in the roadmap. DOE-NE, using teams of U.S. and international experts, will apply a structured process to assess the expected performance of concepts against the Generation IV goals.

DOE-NE will also gather information on concepts by other means such as literature searches and contacts with design teams. Concepts may be combined or otherwise modified and synthesized into the set studied in the roadmap. Concepts with the potential to meet the goals with reasonable R&D needs will be studied further.

Based on the results and conclusions of this initial activity, submitters of concepts may be invited to provide further information at their own expense. Later stages of activity will include a structured evaluation process to (1) select those concepts that have the best prospects for substantial progress towards the Generation IV goals, (2) evaluate their technology gaps, and (3) estimate the needed R&D to close the gaps. These later stages are expected to produce a detailed R&D plan that will be used for Generation IV program planning and technology development.

The roadmap is intended to guide development of the most promising concepts toward commercial deployment on or before 2030. The Generation IV technology roadmap is scheduled for completion in September 2002.